EPA REGION 8 QA DOCUMENT REVIEW CROSSWALK

QAPP/FSP/SAP for: *(check appropriate box)* ☐ **GRANTEE** ☐ **CONTRACTOR** ☐ **EPA** ☐ **Other**	**Entity** *(grantee, contract, EPA AO, EPA Program, Other)* Click here and type Entity	**Regulatory Authority** **and/or** **Funding Mechanism**	☐ **40 CFR 31 for Grants** ☐ **48 CFR Part 46 for Contracts** ☐ **Interagency Agreement** ☐ **EPA Administrative Order** ☐ **EPA Program Funding** ☐ **EPA Program Regulation** ☐ **EPA CIO 2105**
Document Title *[Note: Title will be repeated in Header]*	Subsurface Investigation Work Plan Mayflower Mill and Tailings Impoundments Area		
QAPP/FSP/SAP Preparer	Formation Environmental 2500 55th Street Suite 200, Boulder CO 80301		
Period of Performance *(of QAPP/FSP/SAP)*		**Date Submitted for Review**	
EPA Project Officer **EPA Project Manager**	 Liz Fagen	**PO Phone #** **PM Phone #**	 303-312-6095
QA Program Reviewer or Approving Official	Kristen Keteles, DAO USEPA Region 8	**Date of Review**	7/23/15

Documents to Review:

1. QAPP written by Grantee or EPA must also include for review:
   Work Plan(WP) / Statement of Work (SOW) / Program Plan (PP) / Research Proposal (RP)

2. QAPP written by Contractor must also include for review:
   a) Copy of signed QARF for Task Order
   b) Copy of Task Order SOW
   c) Made available hard or electronic copy of approved QMP
   d) If QMP not approved, provide Contract SOW

3. For a Field Sampling Plan (FSP) or Sampling & Analyses Plan (SAP), the Project QAPP must also be provided.
   OR
   The FSP or SAP must be clearly identified as a stand-alone QA document and must contain all QAPP required elements (Project Management, Data Generation/Acquisition, Assessment and Oversight, and Data Validation and Usability).

Documents Submitted for QAPP Review:

1. QA Document(s) submitted for review:

QA Document	Document Date	Document Stand-alone	Document with QAPP
QAPP		Yes / No	
FSP		Yes / No	Yes / No
SAP		Yes / No	Yes / No
SOP(s)			Yes / No

2. WP/SOW/TO/PP/RP Date _____
WP/SOW/TO/RP Performance Period _____

3. QA document consistent with the:
WP/SOW/PP for grants? Yes / No
SOW/TO for contracts? Yes / No

4. QARF signed by R8 QAM Yes / No / NA
Funding Mechanism IA / contract / grant / NA
Amount _____

Summary of Comments *(highlight significant concerns/issues)*:

1. **All SOPs including Laboratory, Sample Disposal (SOP3), and the Lab QMP needs to be included**
2. **A timeline of activities needs to be included**
3. **Information on indirect measurements is missing**
4. **Signature line, distribution list, org chart, DCN, Revision number are missing**

The Click here and type Entity **must address the comments in the Summary of Comments, as well as those identified in the Comment section(s) that includes a "Response (date)" and Resolved (date)".**

Element	Acceptable *Yes/No/NA*	Page/ Section	Comments
A. Project Management			
A1. Title and Approval Sheet			
a. Contains project title	Yes	No page number	
b. Date and revision number line (for when needed)	No		
c. Indicates organization=s name	Yes	No page number	Formation Environmental prepared for Sunnyside Gold Corporation
d. Date and signature line for organization=s project manager	No		
e. Date and signature line for organization=s QA manager	No		
f. Other date and signatures lines, as needed	NA		
A2. Table of Contents			
a. Lists QA Project Plan information sections	Yes	No page number	
b. Document control information indicated	No		None
A3. Distribution List			
Includes all individuals who are to receive a copy of the QA Project Plan and identifies their organization	No		
A4. Project/Task Organization			
a. Identifies key individuals involved in all major aspects of the project, including contractors	Yes	Section 2.3 Project organization Pages 3-4	
b. Discusses their responsibilities	Yes	Section 2.3 Project organization Pages 3-4	
c. Project QA Manager position indicates independence from unit generating data	Yes	Section 2.3 Page 4	Kathy Tegtmeyer
d. Identifies individual responsible for maintaining the official, approved QA Project Plan	Yes	Section 2.3 Page 4	Kathy Tegtmeyer
e. Organizational chart shows lines of authority and reporting responsibilities	No		Org chart not included. Include org chart

A5. Problem Definition/Background			
a. States decision(s) to be made, actions to be taken, or outcomes expected from the information to be obtained	Yes	Workplan 3.1-3.3	
b. Clearly explains the reason (site background or historical context) for initiating this project	Yes	Section 2.1 page 2	
c. Identifies regulatory information, applicable criteria, action limits, etc. necessary to the project	Yes	Workplan 3.1-3.3	The purpose is to characterize the site, no action levels
A6. Project/Task Description			
a. Summarizes work to be performed, for example, measurements to be made, data files to be obtained, etc., that support the project=s goals	Yes	Workplan 3.2 4.1 3.1.2 Core sampling methods, 3.1.3 Core logging methods, 3.1.4 Groundwater sampling methods QAPP pp 12-15	Information inputs identified in Workplan, Target analytes and filed parameters are listed in section 4.1/table 4.1 of the workplan Methods indicate what samples will be taken and measurements will be made
b. Provides work schedule indicating critical project points, e.g., start and completion dates for activities such as sampling, analysis, data or file reviews, and assessments	No		Include timeline
c. Details geographical locations to be studied, including maps where possible	Yes	Workplan figures, no page numbers	Maps included of location
d. Discusses resource and time constraints, if applicable	NA		
A7. Quality Objectives and Criteria			
a. Identifies - performance/measurement criteria for all information to be collected and acceptance criteria for information obtained from previous studies, - including project action limits and laboratory detection limits and - range of anticipated concentrations of each parameter of interest	Yes	QAPP Table A2-2 Table A3-2	Table A2-2 has lab acceptance criteria, table A3-2 has detection limits

b. Discusses precision	Yes	Section 2.4.2 and Section 2.4.3 p. 5 and page 7 Table A2-1	
c. Addresses bias	Yes	Section 2.4.2 p. 7 Table A2-1	
d. Discusses representativeness	Yes	Section 2.4.2 p. 7,8	
e. Identifies the need for completeness	Yes	Section 2.4.2 p. 7 Table A2-1	
f. Describes the need for comparability	Yes	Section 2.4.2 p. 7	
g. Discusses desired method sensitivity	Yes	No	
A8. Special Training/Certifications			
a. Identifies any project personnel specialized training or certifications	Yes	2.5 training requirements p. 8	
b. Discusses how this training will be provided	Yes	2.5 training requirements P.8	
c. Indicates personnel responsible for assuring training/certifications are satisfied		2.5 training requirements P.8	Field Investigations manager is responsible for providing training and assuring that training requirements are satisfied.
d. identifies where this information is documented	no		
A9. Documentation and Records			
a. Identifies report format and summarizes all data report package information		SOP 1 Field Documentation	
b. Lists all other project documents, records, and electronic files that will be produced		Section 2.6 pp 9-11	Field log books, chain of custody records, laboratory records and program quality records
c. Identifies where project information should be kept and for how long	No		
d. Discusses back up plans for records stored electronically	No		
e. States how individuals identified in A3 will receive the most current copy of the approved QA Project Plan, identifying the individual responsible for this	No		
B. Data Generation/Acquisition			

B1. Sampling Process Design (Experimental Design)			
a. Describes and justifies design strategy, indicating size of the area, volume, or time period to be represented by a sample	Yes	Workplan section 4.0, table 4.1	
b. Details the type and total number of sample types/matrix or test runs/trials expected and needed	Yes	Workplan section 4.0	
c. Indicates where samples should be taken, how sites will be identified/located	Yes	Workplan section 4.0, Table 4.2, figure 4.1 (map)	
d. Discusses what to do if sampling sites become inaccessible	no		
e. Identifies project activity schedules such as each sampling event, times samples should be sent to the laboratory, etc.	no		Include Timeline
f. Specifies what information is critical and what is for informational purposes only	no		
g. Identifies sources of variability and how this variability should be reconciled with project information	yes	Section 3.1 Quality control	
B2. Sampling Methods			
a. Identifies all sampling SOPs by number, date, and regulatory citation, indicating sampling options or modifications to be taken	Yes	SOPs	
b. Indicates how each sample/matrix type should be collected	Yes	3.1.2 Core sampling methods	
c. If in situ monitoring, indicates how instruments should be deployed and operated to avoid contamination and ensure maintenance of proper data	NA		
d. If continuous monitoring, indicates averaging time and how instruments should store and maintain raw data, or data averages	NA		
e. Indicates how samples are to be homogenized, composited, split, or filtered, if needed	NA		
f. Indicates what sample containers and sample volumes should be used	Yes	Table A3-1	

g. Identifies whether samples should be preserved and indicates methods that should be followed	Yes	Table A3-1	
h. Indicates whether sampling equipment and samplers should be cleaned and/or decontaminated, identifying how this should be done and by-products disposed of	Yes	SOP 7 Equipment decontamination	
i. Identifies any equipment and support facilities needed	Yes	3.1.1Core sampling methods 3.3 Analytical methods	
j. Addresses actions to be taken when problems occur, identifying individual(s) responsible for corrective action and how this should be documented	Yes	5.0 p 35 Assessment and oversight	
B3. Sample Handling and Custody			
a. States maximum holding times allowed from sample collection to extraction and/or analysis for each sample type and, for in-situ or continuous monitoring, the maximum time before retrieval of information	Yes	Table A3-1 3.2.1 Sample containers, preservation, and hold times	
b. Identifies how samples or information should be physically handled, transported, and then received and held in the laboratory or office (including temperature upon receipt)	Yes	Table A2-3	
c. Indicates how sample or information handling and custody information should be documented, such as in field notebooks and forms, identifying individual responsible	Yes	3.2.2 Sample Handling and Chain of Custody	
d. Discusses system for identifying samples, for example, numbering system, sample tags and labels, and attaches forms to the plan	Yes	Workplan section 4.5 Sample labeling	
e. Identifies chain-of-custody procedures and includes form to track custody	No	3.2.2 Sample Handling and Chain of custody	Form is not included.
B4. Analytical Methods			

a. Identifies all analytical SOPs (field, laboratory and/or office) that should be followed by number, date, and regulatory citation, indicating options or modifications to be taken, such as sub-sampling and extraction procedures	No	Field SOPs	Laboratory SOPs are not included SOP 3 (disposal) not included
b. Identifies equipment or instrumentation needed	Yes	Field SOPs	Field SOPs list equipment, no laboratory SOPs are included. Include All Lab SOPs
c. Specifies any specific method performance criteria	Yes	Table A2-3	
d. Identifies procedures to follow when failures occur, identifying individual responsible for corrective action and appropriate documentation	Yes	Table A2-3	
e. Identifies sample disposal procedures	No	SOP 3?	SOP 7 indicates sample disposal procedures are indicated in SOP 3 but SOP 3 was not included. Include SOP3
f. Specifies laboratory turnaround times needed	No		
g. Provides method validation information and SOPs for nonstandard methods	NA		
B5. Quality Control			
a. For each type of sampling, analysis, or measurement technique, identifies QC activities which should be used, for example, blanks, spikes, duplicates, etc., and at what frequency	Yes	Table A2-3	
b. Details what should be done when control limits are exceeded, and how effectiveness of control actions will be determined and documented	Yes	Corrective Actions, 5.3 p 37	
c. Identifies procedures and formulas for calculating applicable QC statistics, for example, for precision, bias, outliers and missing data	Yes	Table A2-1 and SOP 20 Data Review and Validation	
B6. Instrument/Equipment Testing, Inspection, and Maintenance			
a. Identifies field and laboratory equipment needing periodic maintenance, and the schedule for this	No	3.5.2 Laboratory Equipment pg 23	Refers to the Laboratory's Quality Assurance Plan, but this document is not included. SOPs for field work contain information on field equipment but SOPs for laboratory analyses are missing. **Please include Laboratory QAP.**
b. Identifies testing criteria	No	3.5.2 Laboratory Equipment pg 23	

c. Notes availability and location of spare parts	Yes	3.5.2 Laboratory Equipment pg 23	Lab will maintain a file with list of spare parts maintained.
d. Indicates procedures in place for inspecting equipment before usage	Yes	3.5 pp 23-24 Instrument/Equipment Calibration and Maintenance	
e. Identifies individual(s) responsible for testing, inspection and maintenance	Yes	3.5 pp 23-24 Instrument/Equipment Calibration and Maintenance	
f. Indicates how deficiencies found should be resolved, re-inspections performed, and effectiveness of corrective action determined and documented	Yes	3.5 pp 23-24 Instrument/Equipment Calibration and Maintenance	
B7. Instrument/Equipment Calibration and Frequency			
a. Identifies equipment, tools, and instruments that should be calibrated and the frequency for this calibration	Yes	Table A2-2	
b. Describes how calibrations should be performed and documented, indicating test criteria and standards or certified equipment	Yes	Table A2-2	
c. Identifies how deficiencies should be resolved and documented	Yes	3.5.1 Field Equipment	Equipment that fails requirements will be returned to the manufacturer for repair
B8. Inspection/Acceptance for Supplies and Consumables			
a. Identifies critical supplies and consumables for field and laboratory, noting supply source, acceptance criteria, and procedures for tracking, storing and retrieving these materials	No	Section 3.6 pa 24	Critical supplies and consumables are not listed, nor are supply source, acceptance criteria, procedures for tracking, storing these materials
b. Identifies the individual(s) responsible for this	No		
B9. Use of Existing Data (Non-direct Measurements)			
a. Identifies data sources, for example, computer databases or literature files, or models that should be accessed and used	No		On page 24 under 3.7 Criteria for Use of Existing, non-direct measurements, "These data are summarized in Section 3.1.7 of the workplan" There is no section 3.1.7 in the work plan and nothing could be found pertaining to non-direct measurements Use of existing data needs to be address.
b. Describes the intended use of this information and the rationale for their selection, i.e., its relevance to project	No		

c. Indicates the acceptance criteria for these data sources and/or models	No		
d. Identifies key resources/support facilities needed	No		
e. Describes how limits to validity and operating conditions should be determined, for example, internal checks of the program and Beta testing	no		
B10. Data Management			
a. Describes data management scheme from field to final use and storage	Yes	3.8 Data management p 24-26	
b. Discusses standard record-keeping and tracking practices, and the document control system or cites other written documentation such as SOPs	Yes	3.8 Data management p 24-26	
c. Identifies data handling equipment/procedures that should be used to process, compile, analyze, and transmit data reliably and accurately	Yes	3.8 Data management p 24-26	
d. Identifies individual(s) responsible for this	No		Identify the individual responsible
e. Describes the process for data archival and retrieval	Yes	3.8 Data management p 24-26	
f. Describes procedures to demonstrate acceptability of hardware and software configurations	Yes	3.8 Data management p 24-26	
g. Attaches checklists and forms that should be used	No		Attach any forms or indicate that there are not any
C. Assessment and Oversight			
C1. Assessments and Response Actions			
a. Lists the number, frequency, and type of assessment activities that should be conducted, with the approximate dates	Yes-Field No-Lab	5.1 Field performance and system Audits 5.2 pp 36-37 Lab audits	One field audit per season. Lab audits performed according to Lab QMP. **Please include Lab QMP**

b. Identifies individual(s) responsible for conducting assessments, indicating their authority to issue stop work orders, and any other possible participants in the assessment process	Yes	5.1 p 35 Field performance and system audits 5.2 laboratory Performance and systems audits pg 36	Formation QA manager or Formation Project manager Lab QA Officer
c. Describes how and to whom assessment information should be reported	Yes	5.1.1 p. 35 Internal Field Audits 5.3 Corrective actions pp 37-38	Documented and shared with field teams Documented in writing by Lab Project manager or Formation QA Manger and reported to Formation Project manager
d. Identifies how corrective actions should be addressed and by whom, and how they should be verified and documented	Yes	5.1.1 p. 35 Internal Field Audits p 35 2 laboratory Performance and systems audits pg 36 5.3 Corrective actions pp 37-38	Formation Project Manager/QA manager will document Lab QA Officer will address and document
C2. Reports to Management			
a. Identifies what project QA status reports are needed and how frequently	Yes	5.5 p 38 Quality Assurance Reports to Management	Deliverables in the Work Plan will contain QA reports
b. Identifies who should write these reports and who should receive this information	Yes	5.5 p 38 Quality Assurance Reports to Management	Formation Project Manager and QA Manager
D. Data Validation and Usability			
D1. Data Review, Verification, and Validation			
Describes criteria that should be used for accepting, rejecting, or qualifying project data	Yes	4.0 Data review, validation, and usability pp 27-28 Table A2-3 SOP 20	
D2. Verification and Validation Methods			

a. Describes process for data verification and validation, providing SOPs and indicating what data validation software should be used, if any	Yes	4.0 Data review, validation, and usability pp 27-28 SOP 20	
b. Identifies who is responsible for verifying and validating different components of the project data/information, for example, chain-of-custody forms, receipt logs, calibration information, etc.	Yes	SOP 20 4.1 Field data review p 27 4.2 Laboratory Data Review p 27	Field Supervisor Lab QA manager
c. Identifies issue resolution process, and method and individual responsible for conveying these results to data users	Yes	SOP 20	
d. Attaches checklists, forms, and calculations	Yes	SOP 20	
D3. Reconciliation with User Requirements			
a. Describes procedures to evaluate the uncertainty of the validated data	Yes	SOP 20 4.4.1 Evaluating field data p 31 4.4.2 Evaluating laboratory and Chemistry Data	
b. Describes how limitations on data use should be reported to the data users	Yes	SOP 20 4.4.2 Evaluating Lab Chemistry Data p33	Qualifiers listed and described